REMARKS

Upon entry of this Response, claims 1-20 remain pending in the present patent application. Applicant requests reconsideration of the claims in view of the following remarks.

In item 3 of the Office Action, claims 1-4, 7-10, 13-16, 19 and 20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,902,994 issued to Lisson et al. (hereafter "Lisson") in view of U.S. Patent 4,945,225 issued to Gamgee (hereafter "Gamgee") and U.S. Patent 6,642,493 issued to Shiota et al. (hereafter "Shiota"). A prima facie case of obviousness is established only when the prior art teaches or suggests all of the elements of the claims. MPEP §2143.03, In re Rijckaert, 9 F.3d 1531, 28 U.S.P.Q2d 1955, 1956 (Fed. Cir. 1993). For the reasons that follow, Applicants assert that the cited combination of references fails to show or suggest each of the elements of claims 1-4, 7-10, 13-16, 19, and 20. Accordingly, Applicants request that the rejection of these claims be withdrawn.

To begin, claim 1 as currently pending states as follows:

> 1. A method for determining a light output of a light emitting diode (LED) in a scanner, comprising:
> applying a first current to the LED to generate the light output of the LED during a first time period;
> obtaining a first measure of the light output of the LED during the first time period with a number of sensors in a sensor array;
> applying an altered current to the LED to generate the light output of the LED during a second time period;
> obtaining a second measure of the light output of the LED during the second time period with the sensors in the sensor array; and
> detecting a saturation of the sensors in the sensor array by comparing a difference between the first measure of the light output and the second measure of the light output with a predefined difference threshold.

With respect to claim 1, the Office Action states in part:

> "While Lisson does disclose that altered currents are supplied by a control circuit to step the intensity of a light source until saturation of a light sensor, Lisson does not specifically include a corresponding means for determining the occurrence of the saturation or specify that the image sensor be part of a scanner apparatus comprising a processor and a memory for incrementing and ectrementing the driving source of an LED as the light source.
> Gamgee teaches a single discriminator including a light source and a sensing optical detector circuit that produces an output corresponding to the intensity of the light source (col. 3, lines 16-25) wherein saturation of the sensing optical detector circuit is

> detected by producing first and second magnitude outputs, at first and second times, relating to first and second light source intensities (col. 2, lines 49-58) and determining when a difference between the first and second outputs are not significant as compared to a predetermined significance value/threshold (col. 2, lines 65, to col. 3, line 11)." (Office Action, pages 3-4)

Applicants respectfully disagree. Specifically, at column 2, lines 49-58, Gamgee states:

> "The discriminating apparatus of FIG. 2 acts as the detector 11 of FIG. 1 and includes an ***incidence signal sensing means 20 sensitive to an incident radiant signal 10 comprising both radiant information signal and radiant background signal*** to generate an output sensing signal 21 of a level related to the level of the incident signal 10. Detector means 22 is responsive to the sensing signal 21 to detect an information signal component of the sensing signal 21 from the background signal level component of the sensing signal 21." (Emphasis Added)

In this respect, the sensing optical circuit does not produce first and second magnitude outputs at first and second times that are related to first and second light source intensities. Rather, an "incident radiant signal 10" (presumably a radiant light) falls onto an "incident signal sensing means 20". The "incident radiant signal 10" is a single radiant signal that comprises two separate components. These components are a "radiant information signal" (presumably a data signal) and a "radiant background signal" (presumably noise). However, the incident signal sensing means 20 only generates an output of a single magnitude. The discriminator circuit as taught by Gamgee is employed to maintain a bias of the sensor to facilitate differentiation between the various components of the input signal to identify the information in the signal as opposed to the noise. This is seen in the statement of Gamgee where "the sensing means 20 is sensitive to incident radiation and generates an output sensing signal 21 of a level related to the intensity of incident radiation 10". Thus, only a single output sensing signal 21 is generated by the incident radiation on the sensor described.

In addition, at column 2, lines 65, through column 3, lines 11, Gamgee states:

> "The detector means 22 is responsive to an increase in the background signal level component to increase or generally maintain the discrimination of an information signal component of the sensing signal 21 generated upon reception by the incident signal sensings 20 of an information signal superimposed on background signal level. The sensing means 20 is sensitive to

> incident radiation and generates an output sensing signal 21 of a level related to the intensity of incident radiation 10. The detector means 22 is responsive to the sensing signal 21 to detect in the sensing signal 21 an information signal component superimposed on background radiation component. The sensing means has a variable operating point which determines its operating characteristics. The sensing means 20 generates, in response to incident radiation 10, an output signal 21 of magnitude related to the incident radiation level up to a saturation level of the output signal 21, beyond which saturation level, any changes in incident radiation level do not produce significant changes in magnitude of the output sensing signal 21. The discriminating apparatus includes a compensating circuit 26 operative in response to any variations in background radiation intensity level within a desired range to adjust the operating point of the incident radiation sensing means 20 so as to maintain the level of the sensing signal 21 below the saturation level."

In this respect, Gamgee discusses discrimination between an information component and a background or noise component in the same signal. There are not two measures of light output of an LED that are taken at different periods of time as described in claim 1. In addition, there is no comparison between a first measure of a light output and a second measure of a light output with a predefined different threshold. In fact, no comparison is performed. Accordingly, Applicants assert that the element of "detecting a saturation of the sensors in the sensor array by comparing the difference between the first measure of the light output and the second measure of the light output with a predefined threshold" as set forth in claim 1 is not shown or suggested by Gamgee.

In addition, Shiota fails to show or suggest such an element as well. In particular, Shiota describes setting a voltage applied to an LED light source based upon a feedback signal from a sensor. There is no comparison of a difference between two measures of the light output of the light source with a predefined difference threshold in an attempt to detect a saturation of the sensors.

Accordingly, Applicants assert that the rejection of claim 1 in view of the combined references is improper. Applicants also assert that the rejection of claims 7, 13, 19, and 20 is improper to the extent these claim include elements similar in scope with that of claim 1 above. Accordingly, Applicants respectfully request that the rejection of claims 1, 7, 13, 19, and 20 be withdrawn. In addition, Applicants request that the rejection of claims 2-4, 8-10, and 14-16 be withdrawn as depending from claims 1, 7, and 13, respectively.

In addition, in item 4 of the Office Action, claims 5, 6, 11, 12, 17, and 18 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Lisson in view of Gamgee and Shiota, and further in view of U.S. Patent 4,982,203 issued to Uebbing et al. (hereafter "Uebbing"). A prima facie case of obviousness is established only when the prior art teaches or suggests all of the elements of the claims. MPEP §2143.03, In re Rijckaert, 9 F.3d 1531, 28 U.S.P.Q2d 1955, 1956 (Fed. Cir. 1993). Applicants assert that the cited combination of references fails to show or suggest each of the elements of claims 5, 6, 11, 12, 17, and 18. Accordingly, Applicants request that the rejection of these claims be withdrawn.

In particular, claims 5 and 6 recite as follows:

> 5. The method of claim 1, wherein the step of detecting the saturation of the sensors in the sensor array by comparing the difference between the first measure of the light output and the second measure of the light output with the predefined difference threshold further comprises calculating the difference by determining a percent increase of the second measure over the first measure.
>
> 6. The method of claim 1, wherein the step of detecting the saturation of the sensors in the sensor array by comparing the difference between the first measure of the light output and the second measure of the light output with the predefined difference threshold further comprises calculating the difference by determining a percent decrease of the second measure relative to the first measure.

In this respect, claims 5 and 6 recite the additional step of calculating the difference by determining a percent increase or decrease of the second measure of the light output of the LED over the first measure of the light output of the LED.

With respect to claims 5 and 6, the Office Action states:

> "As noted above, Lisson in combination with Gamgee and Shiota teaches many of the features of the claimed invention, and while combination teaches incrementing/decrementing the current in order to obtain an optimal value, the combination does not specifically teach determining the amount the current is to be changed using percentages.
>
> Uebbing teaches a method and apparatus for improving the uniformity of an LED printhead by compensating for the degradation in light output of a plurality of LEDs (column 4, lines 66-68) comprising obtaining the light output measures of two different pulse-width values and comparing the difference between these values to determine the percentage increase, of the second measure relative the first measure, needed to meet the desired output level deviation/difference (column 5, lines 1-22)." (Office Action, pages 5-6)

Applicants disagree with the above assertion. Uebbing merely teaches measuring the light output of LEDs at two separate times to determine a degradation of light output over the time period between measurements. (See Uebbing, column 6, lines 9-24). In this respect, Uebbing is not detecting a "percentage increase" between the two measurements, but the amount of degradation in the light output. In addition, Uebbing does not suggest determining "the percentage increase, of the second measure relative to the first measure, needed to meet the desired output level deviation/difference (in this case zero)." There is no "desired output level deviation/difference" that is to be reached. Rather, the amount of light output degradation is determined between the measurements and the pulse width is adjusted to compensate. The ***difference between the measurements is not compared to anything***. Consequently, Uebbing fails to show or suggest the concept of obtaining different measures of light output and comparing a difference between the measures with a predefined difference threshold as claimed in claim 1.

Claims 11-12 and 17-18 recite elements similar in scope with those of claims 5-6 above. Applicants assert for the reasons above, the cited combination of references fails to show the elements of claims 5, 6, 11, 12, 17, and 18. Accordingly, Applicants respectfully request that the rejection of these claims be withdrawn.

In addition, with respect to the rejection of claims 1-20 in view of the multiple references cited above, it is well settled that where multiple references are relied upon in combination for an obviousness rejection, there must be some teaching, suggestion, incentive or inference to make the proposed combination. Carella v. Starlight Archery, 804 F.2d 135, 231 USPQ 644 (Fed. Cir 1986). In citing motivation to combine Lisson, Gamgee, and Shiota, the Office Action states:

> "It would have been obvious to one having ordinary skill in the art to modify the invention of Lisson to include a corresponding means for determining the occurrence of the saturation of specify that the image sensor be part of a scanner with and LED as the light source, as taught by Gamgee, because Lisson teaches altering a current supply to a light source until saturation is detected, but provides no method for determining such saturation and the invention of Gamgee suggests that the combination would have provided a method for determining the saturation when an intensity is altered up to a saturation point (col. 1, lines 61-64) by employing a common relationship (col. 1, lines 64-68) thereby accurate determination of when the maximum intensity has been reached." (Office Action, pages 4-5)

Applicants respectfully disagree. In particular, Gamgee does not show or suggest the determination of a saturation. Rather, Gamgee teaches a discrimination between an information component and a noise component of a particular signal. Thus, the statement that Gamgee suggests that "the combination would have provided a method for determining the saturation when an intensity is altered up to a saturation point by employing a common relationship, thereby accurate determination of when the maximum intensity has been reached" makes no sense in light of what is actually taught by Gamgee. In addition, the statement that "Lisson teaches altering current supplied by a light source until saturation is detected" is incorrect. Specifically, Lisson teaches the fact that the current may be altered to a light source such that the intensity of the light source changes up to the point that saturation is achieved where no more differences occur even though greater intensities of light are created. Thus, there is no actual detection of a saturation point as described by Lisson. Rather Lisson merely discusses the fact that sensors will become saturated when the intensity of the light that falls incident to the sensing surfaces is too great. Thus, Applicants assert that the cited motivation to combine the above cited references is illusory and non-sensical in view of the actual teachings of the cited references. In this respect, Applicants assert that the combination of references cited in the Office Action can only reasonably be made with the use of impermissible hindsight construction. Given that the Office Action does not state the required motivation to combine the references, Applicant asserts that the rejection of claims 1-20 over the cited combination of references is improper. Accordingly, for this additional reason, Applicants request that the rejection of claims 1-20 be withdrawn.

CONCLUSION

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

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